

Remarks

This amendment responds to the official action mailed January 28, 2010 and is accompanied by a Request for Continued Examination and the required official fee.

Claim 1 has been amended to positively recite the mechanical relationships of the carcass rail (fixed to the carcass, e.g., on the inside walls of a cupboard), the pull-out rail (attached to the movable drawer) and the central rail (arranged between the carcass rail and the pull-out rail, and displaceable relative to both of them). See specification page 5, lines 4-16 (paragraph [0020]).

Claim 1 defines that a control roller is rotatably mounted on the central rail and is in engagement with the carcass rail and with the pull-out rail. See page 5, lines 24-27 (paragraph [0020]). According to claim 1, the control roller is in engagement with both of the two relatively displaceable rails between which the central rail resides. Also as defined in claim 1, the bearing part of the control roller has a hard body and also a radially protruding soft body. The radially protruding soft body extends only over part of the axial extent of the hard body.

Claim 1 has now been amended to recite that the control roller mounted rotatably on the central rail serves exclusively for synchronizing the position and movement of the central rail with the pulling-out and pushing-in operation of the drawer. This language is found in the specification at page 2, lines 29-33 (paragraph [0008]). By way of illustration, in the exemplary embodiment shown in Figs. 1 and 2, the weight of the drawer is borne by rollers 4. Pairs of rollers 4 reside between the carcass rail and the central rail, and between the central rail and the pull-out rail. See page 5, lines 29-32 (paragraph [0021]). Inasmuch as provisions such as roller 4 are made for bearing the weight, the control roller serves exclusively to synchronize the relative positions of the central rail to the carcass rail and pull-out rail during pulling-out and pushing-in of the drawer. The result of these aspects is a superior full-pullout type drawer support and guiding mechanism allotting the relative displacements of the respective rails.

The aspects inserted into claim 1 by amendment are fully supported in the original disclosure, including but not limited to the passages cited above. No new matter is presented.

Claim 1 as amended is definite and positively distinguishes over the prior art of record. There is no logical basis of record to support the proposition that differences between the invention and the prior art are such that the subject matter claimed as a whole would have been obvious.

Claim 1 as amended defines over Hutzelman (US 2873150). Among other reasons, Hutzelman discloses a carcass rail and a pull-out rail but there is no central rail or other element that is relatively movable in a manner that is analogous to a central rail. There is no roller in Hutzelman that bears against two rails or flanges. Hutzelman has a roller 18 at the front end of the carcass rail, on an axis that is stationary on the carcass, and a roller 18 at the rear end of the pull-out rail on an axis that is fixed to the rear of the drawer.

Claim 1 as amended also defines over Röck (US 5882100). Röck discloses a carcass rail, a pull-out rail and a central rail, but teaches only a homogeneous driving roller, made of one material. Röck requires additional rollers to ensure that the rails do not lose their correct position over the course of time.

Claim 1 is not met by either Hutzelman or Röck. In the official action, claims 1 and 4-8 were rejected over a combination of Röck. It is asserted in the action that claim 1 would have been obvious to a person of ordinary skill by combining Hutzelman and Röck. Claim 1 has been amended such that the combination of Hutzelman and Röck does not meet all the aspects of the invention claimed as a whole. The remaining claims depend from claim 1 and are allowable with claim 1, as well as for their own limitations as discussed below.

Applicant requests reconsideration of the claims in view of this amendment. There is no basis to believe that a person of ordinary skill would perceive a likely benefit to be obtained by selectively combining aspects of Hutzelman and Röck. The allegedly predictable benefits of a combination that are set forth in the official action fail to articulate how a person of ordinary skill would routinely substitute selected

elements from the prior art references, with any reasonable expectation of beneficial results, leading up to the invention claimed as a whole. There is no basis to believe that Hutzelman's solutions to wear and friction conditions of rollers on the drawer and on the carcass bearing with clearance against rails on the carcass and drawer, respectively, would be perceived as an improvement in a three rail configuration as claimed.

Hutzelman discloses a roller having a relatively hard cylindrical bearing part 18 and a thin rib 28 of softer material, protruding radially from the hard part. Hutzelman does not disclose any application for such a roller to a mechanism that couples motion between rails that are to move in opposite directions relative to an intermediate or central rail as claimed. There are two rails in Hutzelman on each side of the drawer, namely the carcass rail 12 fixed in the cabinet and the pull-out rail 19 fixed to the drawer. The front end of the carcass rail has a fixed roller. The pull-out rail has a roller affixed at the rear end to the drawer. The flange of the pull-out rail rests exclusively on the top of the front end carcass rail fixed roller (Fig. 3).

Hutzelman's carcass rail has two spaced flanges. The flanges are shown as spaced by a distance greater than the outside diameter protruding rib 28 on the roller at the rear of the pull-out rail. It is necessary that the flanges be spaced by a distance greater than the diameter of the roller, including protruding rib 28. Otherwise, the rib will bear on one flange and rub against the opposite flange, eventually wearing away. The roller bears against one of the upper or lower flanges of the carcass rail at a time, and only one.

In Hutzelman's Figs. 1 and 4, the roller at the back of the drawer rests the weight of the drawer against the lower flange of the carcass rail leaving a gap with flange 13 that is visible in Fig. 4. As the drawer is pulled forward (to the left in Figs. 1 and 2), the roller turns counter-clockwise. When passing the balance point, considering that the front roller is a fulcrum, the drawer balance tips forward. The roller on the rear of the drawer shifts to bear against the upper flange of the carcass rail. The roller changes direction to turn clockwise from that point forward. This is clear from the Hutzelman specification, from col. 3, line 52 to col. 4, line 12.

The structure and function of Hutzelman are such that the roller on the rear of the drawer requires clearance between the upper and lower flanges of the carcass rail. The roller shifts across the clearance area and changes rolling directions at a point of transition between the upper and lower flanges. Hutzelman's rib 28 cushions the shift and prolongs engagement with one or the other of the rails, but only one at a time. Although the stated function of the rib is to obtain traction to turn the roller, the person of ordinary skill readily understands from the description that the roller is not useful to provide positional control. There is no analogy to a structure with spaced flanges that bear against opposite sides of a roller while the flanges are translated in opposite directions as the drawer is opened or closed. Hutzelman is only relevant for the proposition that one can make a roller with a relatively compressible soft outer rib and a less compressible hard inner body, to prolong contact between the roller and a track enclosing the roller with clearance.

In Röck there are three rails, a carcass rail, a pull-out rail and a central rail. The roller that is carried on the central rail has a cylindrical shape and lacks a distinct soft bead over a limited axial extent. In Röck, a front roller 16 resembles the front roller of Hutzelman but is fixed at the front of the central rail instead of on the front of the carcass rail. The issue that must be addressed in assessing obviousness is whether the person of ordinary skill would perceive it likely that a beneficial effect would be provided by adding a compressible outer rib to Röck's roller.

The person of ordinary skill has no reason to expect that a beneficial effect, i.e., an improvement in the mechanism such as improved operation or longevity or cost, might result from placing a soft compressible rib similar to rib 28 on the roller of Hutzelman, onto the central rail in Röck. In Hutzelman, the rib is provided for traction on one side of the roller or the other, against an upper flange or a lower flange, the flanges having at least minimal extra clearance, rendering the contact between the roller changing and uncertain, particularly at the balance point of the drawer. The pertinent attribute is that the rib is compressed between the roller and the flange of the rail on one side of the roller. The Hutzelman roller must be clear of contact on the

other side because on such other side the surface of the roller moves in a direction opposite from the motion of the flange of the rail.

The structure and function of Röck's three rail guide is fundamentally different than that of Hutzelman. One cannot logically expect any benefit whatsoever from adding a compressible rib to Röck. Referring to Röck Fig. 5, which is a cross section through the control roller 11 in Fig. 1, the pull-out rail is the part 8 that rests against the top side of roller 11. The carcass rail is the mirror image of the pull-out rail on the underside of roller 11, namely "support rail" 5 affixed to the carcass by web 6. The central rail in Röck is the part identified as intermediate rail 7. It is clear from Fig. 6 of Röck that the weight of the drawer applies downward pressure via flange 28 of pull-out rail 8, which flange 28 pushes down against the top side of roller 11. The roller 11 rests on the flange 27 of the carcass rail or support rail 5. There is no space or clearance provided or possible between the opposite sides of roller 11 because the weight of the drawer on pull-out rail 8 holds the roller 11 against support rail 27. There is no reservation of clearance space. Gravity maintains contact on both opposite sides of roller 11.

According to applicant's claim 1 as amended, the control roller serves exclusively for synchronizing. This is effected in the embodiments disclosed as examples because applicant's rollers 4 carry the drawer weight. Control roller 6 does the positioning.

Claim 1 defines differences over Hutzelman and Röck, even if Hutzelman's roller was mounted in Röck's three rail configuration. Furthermore, there is no basis to assert that the person of ordinary skill would expect to improve Röck by using Hutzelman's roller in Röck's configuration. The logical expectation is that the weight of the drawer on the roller would simply compress the rib against the roller on both sides. Such a roller would operate in the same way that Röck's roller already operates without such a rib. No beneficial result can be expected by making the combination. There is no basis to assert that claim 1 would have been obvious because there is no articulated explanation to support for making the combination, and because the combination would not meet claim 1 as a whole including the aspect

of the control roller serving only for control, as opposed to being a weight bearing roller. Applicant requests withdrawal of the rejection over the combination of Hutzelman and Röck with respect to claim 1 and the claims that depend from claim 1.

Claims 1 and 4-8 were alternatively rejected over a combination of Hutzelman and FR 2441086. Reconsideration is requested. FR 2441086 discloses a paired roller bearing set wherein the rollers are displaceable vertically. Attached is a copy of a robotic translation of FR 2441086 generated by the EPO website. As best understood and as shown in Fig. 1 of FR 2441086, the pertinent elements are a rail 2 carrying the drawer 1, a carcass rail 6 and a frame 5 that carries two rollers 3 and 4, respectively bearing on the opposite sides of rail 2. An exemplary roller 3 as shown in Figs. 2 and 3 has built in capability for vertical displacement guided along the edges 17 in Fig. 2 by a clearance distance shown in Fig. 2 (which appears to show one of the two vertically displaceable rollers in the middle of its range of displacement).

There is no explanation in the official action for how a combination of Hutzelman and FR 2441086 might be expected by a person of ordinary skill to produce an improvement in FR 2441086. The part that is mentioned as a hard body 15 is a plastic outer part of the roller 3, much like a tire on a wheel. A compressible rib on one or both of two vertically displaceable rollers 3, 4, which fit between the flanges of the carcass rail 6, has no apparent justification. The spacing of the roller axles is fixed by attachment to frame 5 but the rollers are vertically displaceable. There is no point in having a relatively compressible rib to maintain contact with a roller if the roller is free to move up or down to conform, e.g., to discontinuity along the supporting surface or the tipping of the drawer rail.

Furthermore, the record lacks an explanation of how major alterations to two structurally and functionally different drawer supports would have been obvious. In their separate contexts, the rib of Hutzelman addresses a clearance issue. Clearance issues already are addressed in FR 2441086 by providing displaceable rollers. Furthermore, according to claim 1 as amended, the roller in question serves exclusively for position control, which is not met by the combination even if

attempted. Applicant requests that the rejection over a combination of Hutzelman and FR 2441086 be withdrawn as unwarranted.

Regarding claims 9 and 10, the examiner asserts that FR 2441086 discloses a spindle having a cross section that differs from circular, with a longer dimension in the pull out direction. This assertion is factually erroneous. The spindle in FR 2441086 is a cylinder. FR 2441086 says that the roller mounting is vertically displaceable along guide edge 17. Assuming that the mounting is regarded as a spindle (and there is no basis to do so), the longer dimension that is noted in the official action is perpendicular to the pull out direction and not in the same direction as claimed. Applicant requests reconsideration and allowance of claims 9 and 10, on their own account and also based on their dependence from claim 1, which has not been shown to have been obvious.

Claims 11 and 12 were rejected as obvious from Hutzelman, Röck and US 4120071 – Crescenzi. The official action asserts that Hutzelman and Röck meet all the elements except a holding device that is snap-connected to the central rail. Claims 11 and 12 incorporate claim 1 and are allowable by dependence. Hutzelman, Röck and Crescenzi in any conceivable combination do not meet all the elements of claim 1 as amended. Reconsideration and allowance of claims 11 and 12 are requested.

In reply to applicant's arguments, the examiner asserts that sufficient justification has been provided for combining the aspects of Hutzelman and Röck because the terms "traction," "wear" and "noise" appear in Hutzelman. Applicant does not agree that a sufficient logically articulated basis to reject the pending claims based on a combination of diverse structures is provided simply by the appearance of these words in connection with the application of rollers in one of the diverse structures, particularly Hutzelman where there is clearance around the roller enabling the roller to shift and change rolling directions when the drawer tips forward or back. There are many other details to be considered before one can reach any conclusion about where and how exactly the parts of the dissected prior art might routinely come together in the perception of the person of ordinary skill. Furthermore, even if one

accepts the supposed combination, there is no support for the aspect defined in applicant's claim 1 wherein the control roller serves exclusively for synchronizing a position and movement of the central rail with drawer pulling and pushing operations.

The claims have been amended to better distinguish over the prior art of record. There is no basis to believe that a routine combination of the references of record would meet all the aspects positively stated in the claim 1 and in the claims that depend from claim 1.

Applicant requests reconsideration and allowance of the pending claims.

Respectfully submitted,

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Description of FR2441086

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The present invention relates to a span with running noted in for the frame of tension of a drawer with total outlet, with a ball bearing surrounding an axis and guided with mobility in a direction.

The spans whose rolling bearing is guided in order to radially move by respect to the axis are necessary for certain cases of applying. One of those relates to the span of what one calls a drawer with total outlet, one commutes uses some especially for the furniture of office, the cabinets with tools or like. So that one can leave the drawers fully, those are supported by a rail in a frame of tension and they are guided by rollers placed in two rows.

The center roll of the low row has especially to support the load of the drawer and it is used at the same time for the motion partial of opening of the frame of pulling. It is known to use for these rollers a ball bearing whose bore of the inner ring is a slit which is carried out in an axis with two parallel surfaces so that the ball bearing can move vertically. The vertical guidance of the bearing is necessary so that it is always exactly in lower part of a roller of the upper row.

The performing of the slit in the inner ring of the running, for example by broaching, is very expensive, because the inner ring made out of steel of ball bearing is very difficult to machine.

If, moreover, the slit of the inner ring is small in the small ball bearings i.e. if it reaches only some milli metres of wide, the tool is expensive and brittle.

The purpose of the invention is to carry out a span with running of the type indicated with the beginning so that one obtains exact radial guidance necessary movable running without requiring an expensive shaping.

▲ top The means of reaching this purpose in accordance with the invention consists of what one provided, like guidance in direction on the rolling bearing and the axis, of the plane guide surfaces cooperating whole with the front portion of the inner ring of the running and at the end of the axis.

Other features and advantages of the invention will be better included/understood with the reading of the description which will follow of an example of performing and while referring to the annexed drawings, on which

- figure 1 represents a schematic cut partial of the span of a drawer with total outlet;
- figure 2 represents a cut through a span with running with a ball bearing placed on an axis; and
- figure 3 represents a view of the axis of the span of figure 2 in direction III of figure 2.

Figure 1 represents a drawer 1 with total outlet resting via a rail 2 on rollers 3, 4 of a frame of pulling 5. Rollers 3, 4, for their hand, are guided in a rail 6 with profile out of U which is attached with a wall, for example of a framework of a drawer.

The roller carrier 3 which supports the load of the drawer is visible on figure 2. It constitutes a rolling bearing and comprises an axis 8 which is attached with frame 5, for example per riveting of end 9 of the axis in the wall of frame 5. Axis 8 guides a ball bearing 10 which comprises an inner ring 11, an outer ring 12, balls 13 and one cage 14. On the outer ring 12, one laid out a ring of running 15, for example out of plastic.

It is essential that the bore of inner ring 11 is larger than the diameter of axis 8, which makes it possible running 10 to move compared to this axis. It is necessary that displacement can occur only in the vertical direction. For that, axis 8 comprises a tette 16 of which the part side axis is milled according to two parallel guide surfaces vertical 17.

In correspondence with surfaces 17, one milled a groove out of U 18 at the front end of ring 11, the with dimensions one of the tette 16. The width of groove 18 corresponds about to the distance between two surfaces 17 and its lateral walls 19 rest on surfaces 17.

One sees on figure 3 the form of axis 8 and particularly of the tette 16. Surfaces 17 extend on entire height from head 16, but

single parts of the surface 17 being with the vicinity of a flattened portion 20 of the tette 16 are in contact with the lateral walls 19 of groove 18 on ring 11.

The manufacture of surfaces 17 and the lateral walls 19 can be carried out in a single way, for example by milling, owing to the fact that they are very accessible parts. Although walls 19 of groove 18 and, consequently, surfaces 17 are placed on the front face of ring 11, a good guidance is obtained because the surfaces in contact 17, 19 are E a relatively large distance from the axis of ring 11.

Of course, various modifications can be brought by the man of the art to the apparatuses or methods which have been just described only as nonrestrictive examples without leaving the frame of the invention.

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